

An Asian darkling beetle, *Ceropria induta* (Wiedemann), established in Florida (Coleoptera: Tenebrionidae)

Warren E. Steiner, Jr.

Department of Entomology, NHB-187
Smithsonian Institution, Washington, DC 20560

Vince Golia

7059 Geneva Lakes
Lake Worth, FL 33467-7763

Abstract. Specimen records for an adventive darkling beetle, *Ceropria induta* (Wiedemann) (Coleoptera: Tenebrionidae; Diaperinae) show that this Asian insect has become established in southern Florida, USA. Illustrations and a diagnosis of the beetle are provided, with notes on habitats and possible polyporaceous hosts, and the genus is incorporated into a key to the related North American taxa.

Introduction

A single Florida specimen of the Asian tenebrionid *Ceropria induta* (Wiedemann) taken (by VG) in 1998 led to the listing on the World Wide Web of an occurrence of this beetle in Dade County (Thomas 2000; Dunford et al. 2005). The identification was made by C. A. Triplehorn, Ohio State University. In order to further substantiate this and to report more recent specimen records (WS), we offer this report. These data confirm that the species has become naturalized in southern Florida. Because this adds a new genus and species to the list of exotic insects in the United States, a diagnosis and illustrations are provided here, with some notes on life history.

Several U.S. Department of Agriculture interceptions of *Ceropria* spp. in plant products and wood crating have been made during the past decade (E. Kane & N. Vandenberg, personal communication), including a *C. induta* from Thailand, demonstrating that these insects can disperse via commerce. *Ceropria induta* is common in collections from many Asian countries (Masumoto 1994) including Japan, southern China to Assam, and many islands of Indonesia and the Philippines. More than 65 *Ceropria* species are described (Gebien 1938; Masumoto 1994, 1995a, 1995b) and known from moist tropical regions of Africa, Asia, New Guinea and Australia, but not from anywhere in the Western Hemisphere. *Ceropria induta* (the type-species) is a member of the Diaperinae and related to beetles of another large cosmopolitan genus, *Platydemia*. Color photographs of *C. induta* and related species (Kurosawa et al. 1985; Dunford

et al. 2005) illustrate the metallic "oily" luster of these beetles.

Specimens and data. "FL, Dade Co., Coral Gables, Camp Matahachee, Old Cutler Road, 2/18/1998, on dead log at night, Vince Golia" (1); "USA: FLORIDA, Broward Co., Dania, 26E03'N, 80E08'W, 13 February 2004 / W. E. Steiner & J. M. Swearingen collectors" (4). Field notes on the latter specimens, found during the day, describe a remnant tract of swamp forest with "mixed hardwoods, royal palm, *Ficus*, mangrove" and "side paths at trashy edge, lots of dead wood, with bracket fungi" where a pair of *Ceropria* were "in small knot-hole under broken piece of *Ficus* wood" and "under cut oak logs nearby, got two more." Polypore fungi including *Ganoderma lucidum* (W. Curt.: Fr.) Lloyd were examined for additional beetles and larvae but none were found.

Specimens are deposited in the Florida State Collection of Arthropods, Gainesville, the US National Museum, Smithsonian Institution, Washington, DC and the V. Golia collection, Lake Worth, FL.

Diagnosis. Body length 8 to 9 mm; greatest width (at middle of elytra) 4 to 4.5 mm; oval in dorsal view (Fig. 1), evenly convex dorsally, less so ventrally. Dorsum smooth and shining, with multicolored metallic sheen on elytra in concentric zones of colors around humeral and postero-lateral areas; pronotum also with metallic luster laterally but black medially; head, legs and ventral surfaces blackish. Elytra finely punctate-striate; intervals slightly convex, with minute scattered punctures. Antennae (Fig. 2) distinctly serrate, with antenno-

meres 4-10 broadly triangular, 11th roughly oval, flattened; antennomeres 1-3 smooth, dark brown, 3rd cylindrical, as long as scapus and pedicel combined; antennomeres 4-11 black, dull, setose and with conspicuous placoid sensoria on all surfaces. Eyes large, separated dorsally by less than their diameters. In males, pro- and mesotibiae distinctly curved at middle with thicker apical part bearing dense patches of setae on serrated ventral side; front tarsomeres 1-4 thickened, with dense golden pads of setae ventrally (Fig. 2).

Ceropria induta keys to the genus *Platydema* in the most recent treatment (Aalbu et al. 2002) of North American Tenebrionidae. As noted by Masumoto (1994), members of the two genera can be separated by the serrate antennae (more moniliform in *Platydema* spp.) and the modifications of the tibiae and front tarsi in males. In *Platydema* males, tibiae are not curved or armed; front tarsi may have only slight enlargement of the basal tarsomere. In general appearance, no North American *Platydema* spp. are as large as *C. induta*, and the few metallic ones are not as brightly shining and have no "rainbow" zones of color. The insert of the following couplet will modify the key of Aalbu et

al. (2002, p. 475, Key O, couplet 6) to separate *Ceropria* from *Platydema*:

- 6(5). Mesosternum projecting anterad as prominent, horizontal lobe *Liodema*
 — Mesosternum concave between middle coxae
 6a
- 6a(6). Antennae serrate, flagellomeres 4-10 broadly triangular; pro- and mesotibiae distinctly curved in males *Ceropria*
 — Antennae moniliform, flagellomeres 4-10 globular; pro- and mesotibiae unmodified in males *Platydema*

Other metallic species of Tenebrionidae that may be confused with *C. induta* include the Floridian *Nautes azurescens* (J. du Val) (known previously as *N. viridimicans* (Horn); see Steiner 2005) in the Helopini, of similar size but more parallel-sided, uniformly blue-green and with long slender antennae, and the coelometopine *Apsida belti* Bates, known from southern Texas to Costa Rica (Triplehorn 1965), which has multicolored zones in longitudinal stripes, relatively short antennae, and much smoother elytra.



Figure 1-2. *Ceropria induta*, male 1) Dorsal habitus. Specimen from Broward County, Florida. Length of beetle, 8.5 mm.; 2) Oblique frontal view showing details of antennae and curved front tibiae.

Life History. The larva of *C. induta* was described from “tree-fungi (*Polyporus* spp.)” in Japan (Hayashi 1966). Floridian specimens will likely be found to feed on polypore fungi, as do most *Platydemma* larvae, some of which are apparently host-specific. Field notes (WS, 1983) on collections of *C. induta* in Malaysia describe several occurrences of adults and associated larvae on or in unidentified fungus brackets and under bark of logs and stumps with fungi on them. Two adults were reared from larvae associated with other adults labeled “On fungi on logs & stumps” and others were taken “on bark of cut timber at night” and “on dead tree trunks and rotting stumps” at night. A series from Macau was found in “stalked woody polypore fungi” [probably *Ganoderma lucidum*] arising from buried roots at the base of a rotting stump of *Acacia* sp. This cosmopolitan fungus is host to many diaperine and bolitophagine tenebrionids and may be among those utilized by *C. induta* in Florida.

References Cited

- Aalbu, R. L., C. A. Triplehorn, J. M. Campbell, K. W. Brown, R. E. Somerby and D. B. Thomas.** 2002. Tenebrionidae Latreille 1802, pp. 463-509. In Arnett, R. H., M. C. Thomas, P. E. Skelley and J. H. Frank, eds., *American Beetles*. Volume 2. CRC Press, Boca Raton, Florida.
- Dunford, J. C., M. C. Thomas and P. M. Choate, Jr.** 2005. The Darkling Beetles of Florida and Eastern United States (Coleoptera: Tenebrionidae). <http://entnemdept.ifas.ufl.edu/teneb/>.
- Gebien, H.** 1938-42. Katalog der Tenebrioniden, Teil II. Mitteilungen der Munchener Entomologischen Gesellschaft 28-32:370-744.
- Hayashi, N.** 1966. A contribution to the knowledge of the larvae of Tenebrionidae occurring in Japan (Coleoptera: Cucujoidea). *Insecta Matsumurana*, Supplement 1: 1-41, 32 pl.
- Kurosawa, Y., S. Hisamatsu and H. Sasaji.** 1985. Colored Illustrations of the Coleoptera of Japan, Volume III. Hoikusha Publishing Co., Osaka, Japan. 500 pp.
- Masumoto, K.** 1994. A Study of the Asian Species of the Genus *Ceropria* (Coleoptera, Tenebrionidae, Diaperini) (Part 1). *Japanese Journal of Entomology* 62(4): 763-774.
- Masumoto, K.** 1995a. A Study of the Asian Species of the Genus *Ceropria* (Coleoptera, Tenebrionidae, Diaperini) (Part 2). *Japanese Journal of Entomology* 63(1): 1-13.
- Masumoto, K.** 1995b. A Study of the Asian Species of the Genus *Ceropria* (Coleoptera, Tenebrionidae) (Part 3). *Japanese Journal of Entomology* 63(4): 723-734.
- Steiner, W. E., Jr.** 2005. Studies on the darkling beetles (Coleoptera: Tenebrionidae) known from Grand Bahama Island, with descriptions of new species of *Branchus* and *Adelina*. *Proceedings of the Entomological Society of Washington* 107(2): 441-459.
- Thomas, M. C.** 2000. The exotic invasion of Florida. A report on arthropod immigration into the Sunshine State. <http://www.doacs.state.fl.us/pi/enpp/ento/exoticsinflorida.htm>.
- Triplehorn, C. A.** 1965. Revision of Diaperini of America north of Mexico with notes on extralimital species (Coleoptera: Tenebrionidae). *Proceedings of the United States National Museum* 117(3515): 349-458.